

## Certificate of Analysis

**3D-PHAD®** 

**Monophosphoryl 3-Deacyl Lipid A (Synthetic)** 

699852P-1MG Page 1 of 1

Molecular Weight 1537.114 Chemical Formula C82H158N3O20P

Physical State Powder Storage -20°C

**Expiration Date** One year from date of receipt

M Lot Number 5089PGB017

Avanti Lot Number 699852P-1MG-B-017

| ANALYSIS                | SPECIFICATION  | RESULTS                             |
|-------------------------|--|-------------------------------------|
| Physical Examination    | Powder: White solid which contains no foreign matter   | Pass                                |
| TLC                     | >99% Purity Ninhydrin: negative Iodine: one major spot Phosphorus: positive Charring: positive Water dip: one major spot | All Pass                            |
| Proton NMR              | NMR spectrum consistent with structure   | Consistent with structure           |
| Phosphorus NMR          | NMR spectrum consistent with structure   | Consistent with structure           |
| HPLC-ELSD               | NLT 99% (AUC)  | 99.6 % (AUC)                        |
| Mass Spectroscopy (TOF) | [M-NH <sub>4</sub> ]- = 1518.12 ± 1 amu  | [M-NH <sub>4</sub> ]- = 1518.09 amu |

Approved By:

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